

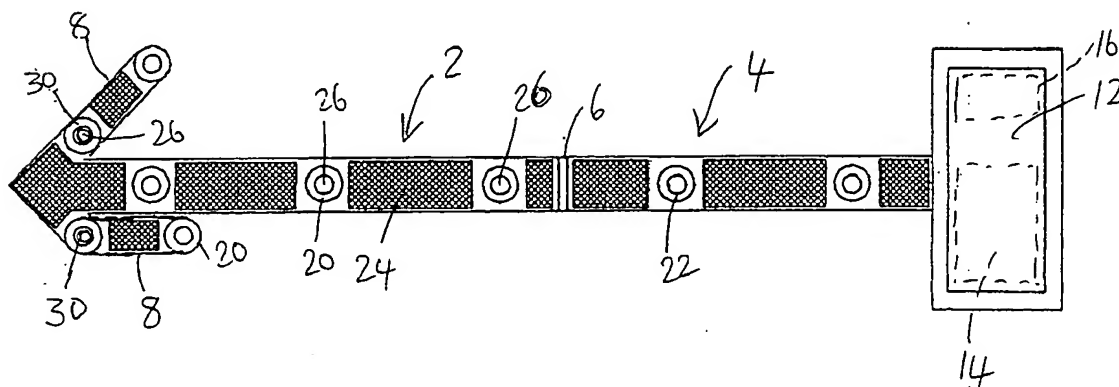
(72) SAUBOLLE, MALCOLM, CA

(71) SAUBOLLE, MALCOLM, CA

(51) Int.Cl.<sup>6</sup> G09F 7/00

(54) **SIGNAL TEMPORAIRE DE DIRECTION DE LA CIRCULATION**

(54) **TEMPORARY TRAFFIC DIRECTION SIGN**



(57) An emergency traffic direction sign has a shallow elongated generally planar body formed in at least two portions hinged together for movement, between a folded condition in which display faces of the portions face one another, and a deployed position in which the display faces are substantially coplanar, magnetic attachment strips secured to rear faces of the portions opposite the display faces, a series of reflectors located in said display faces such as to form an arrow configuration when said faces are in their deployed position, a high intensity light emitting diode located in each reflector, a flashing and sequencing circuit in the body, and connected to said light emitting diodes such as to flash the diodes in a repeating sequence running from a tail to a tip of the arrow configuration, and a battery compartment in the body housing batteries for powering the circuit. For greater compactness, body portions defining barb portions of the arrow may be hinged to one of the body portions for folding into line with the axis of the arrow configuration, for greater compactness.

**ABSTRACT**

An emergency traffic direction sign has a shallow elongated generally planar body formed in at least two portions hinged together for movement, between a folded condition in which display faces of the portions face one another, and a deployed position in which the display faces are substantially coplanar, magnetic attachment strips secured to rear faces of the portions opposite the display faces, a series of reflectors located in said display faces such as to form an arrow configuration when said faces are in their deployed position, a high intensity light emitting diode located in each reflector, a flashing and sequencing circuit in the body, and connected to said light emitting diodes such as to flash the diodes in a repeating sequence running from a tail to a tip of the arrow configuration, and a battery compartment in the body housing batteries for powering the circuit. For greater compactness, body portions defining barb portions of the arrow may be hinged to one of the body portions for folding into line with the axis of the arrow configuration, for greater compactness.

**TEMPORARY TRAFFIC DIRECTION SIGN**

This invention relates to temporary traffic direction signs, and more particularly to illuminated arrow signs used to direct traffic around obstructions.

- 5 Such signs are usually mounted on a police or service vehicle located ahead of the obstruction, and usually involve fairly elaborate illuminated signs which are permanently or semi-permanently mounted on the vehicle. The present invention is however concerned with providing a sign for emergency use  
10 which may be economically manufactured and compactly stored so that it may form part of the emergency equipment of a vehicle such as a police cruiser.

United States Patent No. 5,398,437 describes a warning device for vehicles consisting of a foldable banner with a  
15 reflective warning symbol of reflective material, having magnets by which it may be attached to a vehicle.

United States Patent No. 5,244,439 describes a reflective warning arrow having a frame for mounting to a vehicle or to the underside of its trunk lid, the frame having self  
20 adhering mountings at its edges which may be magnetic.

United States Patent No. 5,097,612 discloses an illuminated traffic control sign in the form of a double headed arrow mounted on a flexible sheet designed for attachment between the open lid and lower part of a vehicle trunk. Movable flaps  
25 are provided to convert the arrow from a double head arrow to a single headed arrow pointing in either direction, or a caution bar. The electrical system may be self contained or independent.

United States Patent No. 5,103,205 discloses a trunk mounted  
30 illuminated arrow sign having a support post for mounting on a vehicle trunk.

It is an object of the present invention to provide an emergency traffic direction sign which is compact in storage, robust, and easy and rapid to apply at almost any position on a vehicle.

5 According to the invention, an emergency traffic direction sign comprises a shallow elongated generally planar body formed in at least two portions hinged together for movement, between a folded condition in which display faces of the portions face one another, and a deployed position in which  
10 the display faces are substantially coplanar, magnetic attachment strips secured to rear faces of the portions opposite the display faces, a series of reflectors located in said display faces such as to form an arrow configuration when said faces are in their deployed position, a high  
15 intensity light emitting diode located in each reflector, a flashing and sequencing circuit in the body, and connected to said light emitting diodes such as to flash the diodes in a repeating sequence running from a tail to a tip of the arrow configuration, and a battery compartment in the body housing  
20 batteries for powering the circuit. For greater compactness, body portions defining barb portions of the arrow may be hinged to one of the body portions for folding into line with the axis of the arrow configuration, for greater compactness.

Further features of the invention will be apparent from the  
25 following description of a presently preferred embodiment.

#### IN THE DRAWINGS

Figure 1 is a plan view of a sign in accordance with the invention;

Figure 2 is a longitudinal sectional view of the sign of  
30 Figure 1;

Figure 3 is a view corresponding to Figure 2, but showing the sign in folded condition; and

Figure 4 and 5 are fragmentary isometric views of a hinge portion of the sign in deployed and folded positions respectively, the view of Figure 4 being partially broken away to show internal features.

- 5 The sign comprises two main body portions 2 and 4 connected in the middle by a hinge 6 such that the display surfaces of the sign seen in Figure 1 may be folded together so as to protect them from damage or soiling during storage. The sign could be formed in more portions, provided that the hinge  
10 arrangements are such that only rear (with reference to Figure 1) surfaces are outward when the sign is folded

The portion 2 is of generally arrowhead shape, with portions 8 representing the barbs of the arrow hinge at points 10 so that they may be folded against the stem of the arrow, as  
15 shown in the case of the lower portion 8 as seen in Figure 1.

The portion 4 has at its distal end a housing 12 which provides both a battery compartment for batteries 14 and accommodates a flasher and sequencing module 16 which may be of known type and implemented utilizing either a  
20 microcontroller or less highly integrated components.

The portion 2 comprises an upper member 18 which may be vacuum formed from synthetic resin material and defines conical open bottomed recesses 20 forming reflectors 22 which may be formed by metallizing the exterior surface of member  
25 18 or applying separately formed reflectors. Areas of reflex reflective tape 24 are applied to the exterior surface between the reflectors. The member 18 is snapped or welded over a planar base board 26 which is a printed circuit board carrying high intensity light emitting diodes 28 which  
30 project through the open bottoms of the recesses 20 when the portions 18 and 26 are secured together. The portions 8 are similarly formed, and are pivotally secured to the portion 2 by nesting recesses 30 on their inboard ends into recesses 20 on the portion 18, these recesses being formed to snap into

one another.

The traces of printed circuits forming the bases of the portions 8 are connected by ribbon cables (not shown) to traces on the circuit board 26.

- 5 The portion 4 has a stem part which is formed similarly to the portion 2, with an upper member 32 secured to a base printed circuit board 34, which extends beneath the housing 12 to support the batteries and the module 16. The traces on boards 26 and 34 are connected by a ribbon cable (not shown),  
10 which is protected from damage by a bellows 36 extending between the boards 26 and 34 and side walls of the members 18 and 32, the top wall of which are connected by an integral plastic hinge (the members 18 and 32 are formed together).

- Flexible magnetic tape 40 of known type is adhered to the  
15 base of the circuit boards, enabling the sign to adhere to body panels of a vehicle. The hinged structure helps the sign accommodate to the body panel profile, while the softness of the tape avoids damage to the vehicle finish. When not in use, the sign folds to a compact unit which may  
20 be conveniently stored with the vulnerable display surface protected by being folded inwards.

- It will be appreciated that various modifications of the above arrangement are possible within the scope of the appended claims. For example, the portions 2 and 4 could be  
25 similar to configuration to the portion 2, with the batteries and module 16 housed within their stems, so as to provide a double ended arrow, a switch being provided such that the sign can operate as either a double or single headed arrow, the sequencing of the light emitting diodes being altered  
30 accordingly. The barb portions 8 could be fixed and integrated with the portion 2. An auxiliary connector could be provided such as to permit the unit to be operated from the battery of a vehicle to which the unit is applied, rather than from its internal batteries. The body could be formed

in more than two hinged portions.

**CLAIMS:**

1. An emergency traffic direction sign comprises a shallow elongated generally planar body formed in at least two portions hinged together for movement, between a folded condition in which display faces of the portions face one another, and a deployed position in which the display faces are substantially coplanar, magnetic attachment strips secured to rear faces of the portions opposite the display faces, a series of reflectors located in said display faces such as to form an arrow configuration when said faces are in their deployed position, a high intensity light emitting diode located in each reflector, a flashing and sequencing circuit in the body, and connected to said light emitting diodes such as to flash the diodes in a repeating sequence running from a tail to a tip of the arrow configuration, and a battery compartment in the body housing batteries for powering the circuit.
2. A sign according to claim 1, wherein body portions defining barb portions of the arrow configuration are hinged to one of the body portions for folding into line with the axis of the arrow configuration.
3. A sign according to claim 1, wherein the body portions comprise upper mouldings defining reflectors and carrying reflect reflective material, and lower boards carrying the light emitting diodes and connecting circuit traces.
4. A sign according to claim 3, wherein the lower board of one of the body portions carries a housing for the battery compartment and the electronic flashing and sequencing circuit.

Ridout & Maybee  
Suite 2400  
One Queen Street East  
Toronto, Canada M5C 3B1  
Patent Agents of the Applicant



